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Project Number N7752

September 9 1998

Mr. James Shafer, Remedial Project Manager
U.S. Department of the Navy
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway, Code 1823, Mail Stop 82
Lester, Pennsylvania 19113-2090

Reference: CLEAN Contract No. N62472-90-D-1298
Contract Task Order No. 302

Subject: Response to Comments
Marine Human Health Risk Assessment, Former Derecktor Shipyard

Dear Mr. Shafer:

Attached are the responses to comments to the Draft Final Marine Human Health Risk Assessment report for the former Derecktor Shipyard, dated June 19, 1998. Comments from the RIDEM were dated July 7,1998 and comments from the U.S. EPA were dated July 28, 1998.

If you have any questions regarding this material, please do not hesitate to contact me.

Sincerely,

Stephen S. Parker
Project Manager

SSP/rt

Enclosures

c: Paul Kulpa, RIDEM (w/encl. - 4)
Kymberlee Keckler, U.S. EPA (w/encl. - 4)
Melissa Griffin, NETC (w/encl. - 4)
Jennifer Stump, Gannet Fleming (w/encl. - 2)
David Egan, TAG (w/encl. - 1)
Restoration Advisory Board (w/encl. - 4)
J. Trepanowski/G. Glenn (w/encl. - 1)
File: N7752-3.2 (w/o encl.)

bc: File N7752-8.0 (w/encl. - 1)

ATTACHMENT A
Responses to Comments from the U.S. Environmental Protection Agency
Dated July 28, 1998

General Comments:

1. The Draft HHRA, dated March 1998, used dry shellfish COPC concentrations on a dry weight basis to calculate risks. Risk should have been calculated using COPC concentrations on a wet weight basis. This error has been corrected in the Draft Final (June 1998) version of this HHRA. However, given the confusion that has existed regarding reporting shellfish concentrations on a wet weight or dry weight basis, all tables in Chapters 2, 5 and 6, which include shellfish or lobster concentration data, should indicate if data presented are wet weight or dry weight concentrations.

Response: *The navy concurs. The tables cited all present wet weight data. This will be specified on the tables in the final report.*

2. The cancer risk from ingestion of lobster is greater than from hard clams and indigenous blue mussels. This should be noted in the text. The text should also note that the ban on shellfish is limited to clams and mussels (*see also* EPA's letter dated April 2, 1998). Information on the enforcement of the ban would also be helpful.

Response: *A summary is presented as Section 6.3. This section states that the highest cancer risks are associated with ingestion of lobster for all receptors. Page 2-3 paragraph 1 describes the limitations of the shellfishing ban. The enforcement of the shellfishing ban is not pertinent to the overall conclusions of the report, since the risk calculations are all made based on an assumption that the receptors freely violate this ban. This would, however, have bearing on the uncertainty assessment, and the request for this information will be forwarded to the RIDEM.*

Specific Comments:

Page	Comment
Table 2-2	Data for inorganic constituents in the indigenous blue mussel, as shown in Appendix A, are missing from this table. These data should be added to this table, as was done in Table 2-1 (hard clams) and Table 2-3 (lobster). In addition, Page 3 of Table 2-2 is repeated as Page 1 of Table 2-2. Please correct.
Response:	*These errors will be rectified in the final report.*
Table 3-1	The references cited as sources in the notes to Table 3-1 should be added to the reference list so that the parameters presented in this table can be verified by the original sources.
Response;	*This information will be included in the reference section as is appropriate.*
Table 5-6	EPA's current Exposure Factor Handbook Guidance (EPA/600/P-95/002Fa) recommends using 400 mg/day for the upper-bound incidental ingestion rate for children. Please modify accordingly.

Response: *This revision will be made as requested.*

Table 6-14 Remove the words Table 6-15 from the title.

Response: *This typographical error will be rectified.*

Table 6-15 The title for this table indicates that the results presented are for adult lead risks using RME exposure assumptions. This is not correct. Table 6-15 presents results for the adult lead risks using CT exposure assumptions. The title of Table 6-15 should be corrected accordingly.

Response: *This typographical error will be rectified.*

Table 6-16 The carcinogenic risks calculated for PCB Sum of Congeners appear to be erroneous. Checks of these values indicated that actual calculated risks should be approximately two times greater for the dermal contact pathway, and slightly greater for the ingestion pathway. The risks calculated for the PCB Sum of Congeners should be corrected.

Response; *The calculations will be verified and revised as necessary.*

Table 6-17 The noncarcinogenic risks calculated for PCB as Aroclor 1254 appear to be erroneous. Checks of these values indicated that actual calculated noncarcinogenic risks were slightly lower than those presented. The noncarcinogenic risks calculated for the PCB as Aroclor 1254 should be corrected.

Response; *The calculations will be verified and revised as necessary.*

p. 6-29, §6.3 Please add a summary table to support this section. A table listing the cancer risks and hazard indices would be useful.

Response: *This information, while maybe helpful to the reader, would not alter the findings of the report. Since a somewhat significant effort would be required to provide this table, it does not seem appropriate to make this change in a draft final to final submission.*

p. 6-30, §6.3.2 This section summarizes the noncarcinogenic risks. The text states that the ME HI for the ingestion of lobster scenario for the subsistence fisherman equaled 3.2. The actual result as shown in Tables 6-1 and 6-12 is an HI of 3.9. The text of Section 6.3.2 should be corrected to correspond to the associated tables.

Response: *This typographical error will be rectified.*

Appendix A Data in this appendix are not grouped by species as was done in the Draft HHRA. Please segregate the data by species (*i.e.* all hard clam samples grouped, all lobster samples grouped, *etc.*) as was done in the Draft (March 1998) version.

Response: *This information, while maybe helpful to the reader, would not alter the findings of the report. Since a somewhat significant effort would be required to provide this table, it does not seem appropriate to make this change in a draft final to final submission.*

INCORPORATION OF PREVIOUS EPA COMMENTS

Evaluation of revisions in response to February 5, 1998 comments:

1. This comment recommended the use of 95% UCLs of the mean instead of the maximum and average concentrations as ME and CT exposure point concentrations. The Navy provided justification for continuing the use of maximums and averages as EPCs based on past experience and consistency with McAllister Point Landfill risk evaluation. Although the Navy does not mention this, the use of maximums and averages as EPCs appears acceptable since for all media evaluated (hard clams, lobster, blue mussels and sediment) only hard clams had more than 10 samples (there were 11 samples). According to EPA guidance and based on experience calculating 95% UCLs of the mean, 95% UCLs of the mean provide a relatively poor estimate of the mean of the data set when there are 10 or fewer samples. Typically, the maximums will be lower than the 95% UCL, and therefore should be used as the EPC (*see* pages 6-21 and 6-22 of the Risk Assessment Guidance). Therefore, the Navy's response, that the EPCs should be the maximum for the ME scenarios and the average for the CT scenarios appears appropriate.

Response: *It appears from the text of the comment that no revision is necessary.*

2. Although the Navy agreed to this comment and used the adult lead model in the risk assessment, the results of the model run or list of the input parameters were not included. This information should be included in the document.

Response: *The Navy concurs. This revision will be made for the final report.*

Evaluation of Comments attached to April 2, 1998 letter:

Draft - pp.5-3 to 5-4, § 5 & Draft Final - p. 5-8, § 5.3:

The unit analysis of the equations presented in the text for ingestion of shellfish and ingestion of sediment reveal unbalanced units (*i.e.*, the units on one side of the equation differ from the units on the other side). To correct these equations, please add a conversion factor (CF) equal to 1E-6 Kg/mg to the numerator. Adjustments should be made for EPCs presented in units of mg/kg instead of mg/kg.

Response: *The Navy concurs. This revision will be made for the final report.*

In addition, no intake equation for the dermal exposure route has been included in this document. Please add it to Section 5.3

Response: *The Navy concurs. This revision will be made for the final report.*

Section 6.0:

Cancer risk and non-cancer hazard quotient equations have been added to Section 6.1. However, the calculated dose to which the receptors are exposed is referred to in these equations as the Intake. This does not correspond to the terminology used in the exposure equations presented in Section 5.3. The terminology used for the exposure dose, whether it is referred to as the intake, the ingestion dose or the exposure dose, should be standardized between Chapters 5 and 6, or the text of Chapter 6 should define the term, "Intake."

Response: *The Navy concurs. This revision will be made for the final report.*

p. 7-7:

EPA's comment discusses that arsenic is described as being possibly bay-related rather than site-related in this HHRA, while the ecological risk assessment indicates the opposite. A response was apparently not provided by the Navy to this comment. Please provide further substantiation in the HHRA for the statements regarding the possible bay-related versus site-related source of arsenic for hard shell clams at this site.

Response: *The response made to this comment in the May 20 response summary indicated that the statements made in the report are correct, as observations of the conditions based on the data available. It also stated that additional work is planned to assess the natural concentrations of arsenic in soils at and near the site, and further assessments of these conditions should wait until this data is available.*

ATTACHMENT B
Responses to Comments from the
Rhode Island Department of Environmental Management
Dated July 7, 1998

1. **Page 2-4 Facility Site Description**
   Second Paragraph

This section of the report addresses the beach on the southern end of the site. The preliminary Assessment conducted at the site clearly states that the Derecktor Shipyard Southern Hazardous Waste Storage area is located adjacent to the beach in question. The report also designates a second nearby area in which waste materials were apparently discarded from a door at the rear of the assembly building to such an extent that the soils and rock along the beach in the area were stained, (the stained soils and rocks are still present). This area was not addressed during the recent SASE report performed on the Derecktor Shipyard. The State has brought this omission to the Navy's attention and the Navy has agreed to collect samples from the area. In correspondence on the Human Health Risk Assessment Report, dated April 27, 1998 this Office noted that he above areas existed at the site. The discussion of this beach in the Human Health Risk Assessment Report does not include these areas and merely states that the proximity of the beach to the site is such that it may have been impacted. It is inappropriate to exclude this information from the report. The report should be modified as follows: In the upland areas immediately adjacent to the beach, two potential areas of concern are known to exist. The first is the Derecktor Southern Hazardous Waste Storage Area. The second is an area in which waste materials were apparently discarded from a door at the rear of the assembly Building to such an extent that the soils and the rocks along the beach in the area were stained.

Response: The requested entry will be added to the paragraph in question.

2. Page 2-9, Shellfish;
   First Paragraph

"Any tissue not considered edible were removed from analysis for this HHRA"

The (hepatopancreas) is an edible portion of the lobster, which is known to accumulate toxins. Therefore, the report should include a discussion of the (hepatopancreas) and note whether it was included in the analysis.

Response: The passage noted in the comment above was directed at not including the tissue of the fish species collected (mummichog) in the assessment of human risk. This will be clarified in the final report. The reviewer is correct that the hepatopancreas is not included in the evaluation of risk to humans. A discussion of this omission is presented in the Uncertainty Assessment, Section 7.3 (page 7-4). This discussion will be brought forward to Section 2 for additional clarity.

3. **Appendix E, Discussion of Shellfish Ingestion Rate**

This section of the report states that the shellfish consumption rate is 1.2 g/day and 15.6 g/day for the adult and subsistence fisherman respectively. This issue was previously discussed at

length during the review of the McAllister Point Human Health Risk Assessment. At that time it was determined that consumption rate was underestimated. Specifically, it was determined that the consumption rate of 15.6 g/day was appropriate for the adult resident and not the subsistence fisherman. The subsistence fisherman consumption rate was considerable higher. A consumption rate of 80 g/day was applied for the prime harvest months, adult values would be used for the rest of the year. The Navy agreed that the consumption rates underestimated the exposure. However, it was noted that corrections to the Human Health Risk Assessment would delay the process. In the interest of expediting the process and reducing overall cost, and since the Navy acknowledge that the consumption rates were underestimated, the Office did not require changes to the McAllister Point Landfill Risk Assessment. However, all future risk assessment would have to incorporate the higher consumption rate. In correspondence, dated 19 February, 27 April, and 3 June, 1998, this office reiterate the previous agreements concerning the shellfish consumption rates. The latest version of the Human Health Risk Assessment Report has not been modified to reflect this agreement.

In Appendix E of this document, the Navy acknowledges that the 15.6 g/day is valid for the evaluation of regular ingestion of shellfish. However, the Navy feels that the nature of the site would dictate the use of the 1.2 g/day. In essence the Navy is stating the normal shellfish consumption rate would not be appropriate for this site. Previously, the 1.2 g/day was thought to be the normal shellfish consumption rate. At that time the Navy did not raise any concern with the use of this rate, In that, the Navy did not feel that a rate other than the normal shellfish consumption rate should be applied to the site (i.e. the Navy did not feel that a rate lower than 1.2 g/day should be applied to the site). Therefore, based on the Navy's stated position, and since site conditions have not changed, the rate of 15.6 g/day is appropriate.

The Navy has also stated that the use of the higher ingestion rate would not result in an appreciable increase in the risk at the site. To illustrate the point the Navy has provided a table which compares the risk to the subsistence fisherman using both ingestion rates. In this comparison, the only consumption rate which generates an appreciable change in the risk is 80 g/day for 365 days per year. It is noted that this rate is greater than that suggested by the RIDEM. Therefore, the report concludes that "it is apparent from this brief comparison that even if the maximum ingestion rate described is used, the risk increase is less than one order of magnitude". In essence, the outcome of the risk assessment will not change if the higher consumption rates are used. Accordingly use of the lower consumption rates is appropriate. Application of the Navy's comparison to the other exposure scenarios does result in an appreciable increase in risk, that is, an unacceptable risk is triggered. Specifically, application of the comparison to the adult and child resident generates an unacceptable risk. Therefore, the Navy's position that use of either consumption rate will not appreciable change the risk at the site is not valid. Accordingly, the risk assessment should be calculated using the higher consumption rates.

Response: *The comment above paraphrases numerous passages taken from various contexts. Many discussions have already been held on this issue, and the Navy's position is documented in meeting minutes, reports and comment responses. A summary of the issue is stated below:*

Appendix E of the HHRA states that the rate of 15.6 g/day is valid for use as a rate of ingestion by persons eating shellfish as a food source. It is not appropriate to use this rate as a rate of ingestion for shellfish taken from a single site (USFDA 1993). The Navy has always conveyed in meetings and in written correspondence that only a fraction of that amount be used to determine risk for a single site, particularly an active industrial port.

However, the Navy has used an ingestion rate of 15.6 g/day in the Derecktor HHRA for a subsistence fisherman scenario. This is considered conservative and appropriate for the assessment of risks to humans from contaminants in shellfish at the Derecktor Shipyard/ Coddington Cove area.